



IMPROVING COGNITIVE AND EMOTIONAL FUNCTIONING IN INTRACTABLE EPILEPSY IN CHILDREN: AN AYURVEDIC APPROACH

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ABSTRACT

Epilepsy is defined as a disorder of brain characterised by an enduring predisposition to generate epileptic seizures, and by neurobiological, cognitive, psychological and social consequences of this condition. Intractable epilepsy is defined as occurrence of one or more seizures per month, despite a trial of the correct AEDs in adequate doses for 2 years. Long term oral AED therapy is the mainstay of epilepsy treatment. In spite of recent advancement in understanding the disease process and its management, up to 40% of epileptics are not at all responding satisfactorily to medicines. Each of the seizure episode causes a permanent defect in the neurons and thus leading to a life long disability. So an intervention which is capable of controlling the seizures and at the same time improving the domains of development leading to an improvement in quality of life is essential. 10 children of the age group 3-12 years suffering from intractable epilepsy attending the OPD of Department of Kaumarabhritya were screened using cognitive and emotional functioning in childhood epilepsy questionnaire and Kooshmanda swarasa ghrita was administered for a period of 90 days and changes in quality of life was assessed. This showed a statistically significant result with $p < 0.05$. The study proved the efficacy of Kooshmanda Swarasa Ghrita in improving the cognitive and emotional functioning in childhood epilepsy.

KEYWORDS: Anti-epileptic drug (AED), intractable epilepsy, Hague Severity Scale, Electroencephalogram, cognitive and emotional functioning in childhood epilepsy, Kooshmanda swarasa ghrita

INTRODUCTION:

Seizure is a transient phenomenon which results from abnormal excessive synchronous neuronal activity in the brain. The definition stresses different aspects of an epileptic seizure: mode of onset and termination, clinical manifestations and abnormal enhanced synchrony. (Mohamad, A et. al 2016)

Epilepsy is a disorder of brain characterised by an enduring predisposition to generate seizures and by the neurobiologic, cognitive, psychologic, and social consequences of this condition. Epilepsy is a diverse family of disorders having in common an abnormally increased predisposition to seizures.

Intractable epilepsy is defined as the condition where seizure control cannot be attained even if appropriate medical therapy with at least 2 AED in maximal tolerated dose for 18 months-2 years, or unacceptable drug-related side effects in spite of good seizure control. (Go, C., & Snead, O. C. 2016)

This is a disease with a group of disabilities with the common manifestation being recurrent seizures. Each seizure episode can lead to cognitive decline especially when it is of high frequency and of prolonged duration. A poor seizure control also leads to disturbed psychosocial functioning and subsequent poor academic achievement, diminished self-esteem, dependent behaviour and an unsatisfactory quality of life. The chance for unexpected death is more in intractable epilepsy and this leads to excess mortality. (Kwan, P., Brodie, M. J., 2002)

Ayurveda has explained epilepsy under the spectrum of *Apasmara*. Ayurveda has clearly explained it as a disease which affects both the body and mind. Different etiological factors and pathogenesis involving both *sareerika* (*vata*, *pitta* and *kapha*- the bioregulatory principles) and *manasikadosas* (*tamas* and *rajas*) have been explained. (Agnivesa, 2016) An elaboration of the types of epilepsies based on the *dosa* (bio entities- *vata*, *pitta* and *kapha* and its management during the attack (*vegaavastha*) and after an attack (*avegaavastha*) are also explained. *Kooshmanda Swarasa Ghrita* is a commonly used formulation with specific indication in epilepsy (*apasmara*) (Vagbhatta, 2012). The ingredients also have proven anti convulsant activity and thus is benefited in epilepsy. The ability of the formulation to act on intellect (*medha*) makes it a capable drug of choice in addressing other comorbidities associated with epilepsy and hence improving the quality of life of these children.

MATERIALS AND METHODS:

The study was a Quasi experimental pre and post-trial. Ethical approval was obtained from the ethical committee of Government Ayurveda College, Thiruvananthapuram. Parents of children satisfying the inclusion criteria were educated about the trial and those willing to participate were recruited after taking an assent or written consent. Ten patients following the specific inclusion criteria were enrolled into the study and were evaluated for clinical signs. The inclusion criteria were as follows:

- (i) Children with intractable epilepsy aged 3-12 years on AED.

- (ii) Children fit for *snehapana* (process of administration of unctuous medicine).

- (iii) Children who are willing to participate in the study.

Here intractable epilepsy is defined as those having one or more seizure per month, in spite of a correct dose of AED for the past 2 years

The trial drug *Kooshmanda Swarasa Ghrita* was given in a dose of 10 ml for the age group 3-6 years and 15ml for 7-12 years, twice daily – one dose in the early morning in empty stomach and the second dose in the evening, one hour before food, with warm water as *anupana*. The trial was given for a period of 90 days. The participants were assessed before and after treatment using cognitive and emotional functioning in childhood epilepsy questionnaire.

Cognitive and emotional functioning in Childhood Epilepsy Questionnaire is a subjective scale specifically developed to measure the cognitive and emotional functioning in childhood epilepsy. Here parent's opinion about child's daily activity is measured. It addresses child's development in cognitive functions and emotional functioning. It includes the following:

These are scored from 0-100 as 0- very often, 25- fairly often, 50- sometimes, 75- almost never and 100- never. The mean value of the items in each subscale is calculated and the denominator is adjusted to include only the items answered.

RESULTS:

Cognitive and emotional functioning in Childhood Epilepsy Questionnaire is a subjective scale specifically developed to measure the cognitive and emotional functioning in childhood epilepsy. Here parent's opinion about child's daily activity is measured. It addresses child's development in cognitive functions and emotional functioning. It includes the following:

These are scored from 0-100 as 0- very often, 25- fairly often, 50- sometimes, 75- almost never and 100- never. The mean value of the items in each subscale is calculated and the denominator is adjusted to include only the items answered. The total score is calculated by taking the unweighted mean of the four subscales.

Analysis:

Paired t test was used to find out the changes in mean and standard deviation before and after treatment.

Table 1: Effect of treatment on Cognitive functioning

	N	Cognitive functioning		Paired t test	
		Mean	sd	t	p
BT	10	20	21.8	3.571	0.006
AT	10	31.2	27.9		

Table 2: Effect of treatment on Emotional functioning

	N	Emotional Functioning		Paired t test	
		Mean	sd	t	p
BT	10	50.2	21.9	3.16	0.012
AT	10	71.5	16.9		

Mean \pm SD in cognitive functioning showed a change from 20.0 ± 21.8 to 31.20 ± 27.9 from before treatment (BT) to after treatment (AT) showing a significant difference in improving the cognitive functioning ($p < 0.05$). This proved the effect of intervention on the variable cognitive functioning (Table 1). Mean \pm SD in emotional functioning showed a change from 50.2 ± 21.9 to 71.50 ± 16.9 from before treatment (BT) to after treatment (AT) showing a significant difference in improving the emotional functioning ($p < 0.05$). This proved the effect of intervention on the variable emotional functioning (Table 2).

DISCUSSION:

Analysis of cognitive functioning using paired t test showed significant result with $p < 0.05$. This could ascertain the high significance of the intervention on scientific grounds. The ability of the intervention to act on concerned areas related to cognition and thereby improving the cognitive functioning of the participant again proved the nootropic action of trial drug. Emotional functioning also showed significant response with $p < 0.05$. The efficacy of the intervention could be proved in improving the emotional functioning in cases with intractable epilepsy. Thus the intervention was able to stimulate other area of brain and thus improve the quality of life of the participants.

CONCLUSIONS:

The research was aimed to evaluate the effects of *Kooshmunda Swarasa Ghrita* in improving quality of life in intractable epilepsy in children on anti epileptic drugs. The results concluded that *Kooshmunda Swarasa Ghrita* had significant effect in improving quality of life in children with intractable epilepsy.

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